Listing of Claims

1. - 60. (cancelled)

61. (new) A system for measuring parameters of a structure, the system comprising

a plurality of strain gauges emplaceable on the structure,

signal transmission apparatus associated with the plurality of strain gauges for transmitting signals therefrom indicative of measurements by the plurality of strain gauges to computer apparatus for processing signals from the strain gauges,

the plurality of strain gauges including at least three strain gauge apparatuses for providing axial strain measurements at each location of one of the at least three strain gauge apparatuses,

computer apparatus for receiving signals from the transmitting apparatus indicative of the measurements of the at least three strain gauge apparatuses and for determining, based on said measurements, bending moment of the structure at a location of a plane including the at least three strain gauge apparatuses,

temperature measurement apparatus for measuring temperature of the structure at the location of the plurality of strain gauges, and

wherein the computer apparatus is programmed to adjust said measurements for temperature changes indicated by the temperature measurement apparatus.

62. (new) The system of claim 61 wherein the computer apparatus is programmed to calculate internal pressure of the structure based on strain measurements from the plurality of strain gauges.

63. (new) The system of claim 61 wherein the computer apparatus is programmed to calculate bending direction of the structure at said location based on said measurements.

64. (new) The system of claim 61 further comprising

display apparatus for displaying to an operator determinations of

the computer apparatus.

65. (new) The system of claim 61 wherein the structure is from the group consisting of riser, subsea riser, lubricator, pipe support structure, tubular string, and lubricator stack.

66. (new) A method for measuring parameters of a structure, the method comprising

measuring parameters of the structure with a system, the system comprising a plurality of strain gauges emplaceable on the structure, signal transmission apparatus associated with the plurality of strain gauges for transmitting signals therefrom indicative of measurements by the plurality of strain gauges to computer apparatus for processing signals from the strain gauges, the plurality of strain gauges including at least three strain gauge apparatuses for providing axial strain measurements at each location of one of the at least three strain gauge apparatuses, computer apparatus for receiving signals from the transmitting apparatus indicative of the measurements of the at least three strain gauge apparatuses and for determining, based on said measurements, bending moment of the structure at a location of a plane including the at least three strain gauge apparatuses, temperature measurement apparatus for measuring temperature of the structure at the location of the plurality of strain gauges, and wherein the computer apparatus is programmed to adjust said measurements for temperature changes indicated by the temperature measurement apparatus, and the computer apparatus is programmed to receive signals indicative of temperature measurements from the temperature measurement apparatus.

67. (new) The method of claim 66 wherein the computer apparatus is programmed to calculate internal pressure of the structure based on strain measurements from the plurality of strain gauges, the method further comprising

with the computer apparatus, calculating said internal pressure.

68. (new) The method of claim 66 wherein the computer apparatus is programmed to calculate bending direction of the structure at said location based on said measurements, the method further comprising

with the computer apparatus, calculating said bending direction.